

Artificial intelligence applications for wound management in nursing palliative care: a narrative review

Daniela Nigrelli,¹ Marika Lo Monaco,² Mariachiara Figura,² Angela Peghetti,³ Laura Iacorossi,⁴ Roberto Latina,² Giuliano Anastasi⁵

¹Department of Biomedicine and Prevention, University of Rome Tor Vergata; ²Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo; ³Former AISLeC President, Executive Board of World Union of Wound Healing Societies; Hospital S. Orsola-Malpighi, Bologna; ⁴Department of Life, Health and Health Professions Sciences, Link Campus University, Rome; ⁵Department of Medicine and Surgery, Kore University of Enna, Italy

Abstract

In contemporary practice, artificial intelligence (AI) has evolved into a practical tool for clinical decision-making and diagnostic accuracy in healthcare. In wound management, AI-based tools enable the analysis of tissue types, precise size measurement, and automated boundary delineation. This narrative review aims to synthesize current evidence on the role of AI in nursing practice for wound management within palliative care settings. It evaluates technical applications, ethical implications, and nursing readiness to provide strategic directions for clinical practice and education. A comprehensive search was conducted in PubMed and ScienceDirect for literature published up to 12 February 2026, focusing on AI, machine learning, wound care, and nursing. The database search identified 1,228 records. After screening and eligibility assessment, approximately 20 studies relevant to the aims of this narrative review were thematically synthesized. Thematically synthesized findings suggest that AI technologies, particularly computer vision and predictive analytics, may enhance wound assessment accuracy and documentation. Mobile platforms support remote monitoring and telemedicine, which is crucial for rural and home-based palliative settings. While AI offers tools for prognostication and decision-making, nurses express a need for better training to address concerns regarding algorithmic bias, privacy, and the preservation of the relational aspect of care. AI serves as a powerful partner that supports nursing expertise rather than replacing it. In palliative care, its value lies in providing objective assessments and enabling proactive responses to patient needs while maintaining a focus on comfort and dignity. Integrating AI fundamentals into nursing curricula and professional development is essential. Furthermore, nurse participation in the design and governance of AI ensures they align with professional values and clinical workflows.

Key words: artificial intelligence; nursing; wound care; palliative care.

Correspondence to: Marika Lo Monaco, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, Piazza delle Cliniche 2, 90127 Palermo, Italy. E-mail: marika.lomonaco@unipa.it

Introduction

Artificial intelligence (AI) encompasses a set of interrelated disciplines, including machine learning, deep learning, computer vision, natural language processing (NLP), and predictive analytics, which enable systems to perform predictive tasks that require human-like intelligence to process information. In healthcare, AI has evolved from experimental applications to practical tools that support clinical decision-making, automate routine processes, and improve diagnostic accuracy.^{1,2} Skin wound treatment is a prime area for AI applications, as it enables serial monitoring and visual assessments useful in determining the prognosis of the wound itself. AI-based tools can analyze wound images to classify tissue types (e.g., granulation, slough, necrosis), measure size with high reproducibility, automatically

delineate wound boundaries, and suggest management strategies aimed at healing.^{3,4} Although several AI applications have demonstrated promising results in general wound assessment and healing-oriented care, direct evidence regarding their implementation in palliative wound care remains limited. Therefore, some implications discussed in this review are cautiously extrapolated from broader wound care literature and should be interpreted within the specific goals and ethical priorities of palliative care. Nursing plays a critical role in wound management, particularly in palliative care settings, where the priority often shifts to symptom control (e.g., pain, exudate, odor), preventing complications, maintaining dignity, and minimizing therapeutic burden over aggressive healing attempts.^{5,6} Patients in palliative care settings often present with complex, chronic, or malignant wounds - such as pressure ulcers in frail elderly patients, fungal tumors, or ulcers caused by radiation exposure.⁷ The conver-

gence of AI with nursing in palliative wound care remains an emerging field. Although AI has made rapid advances in general wound assessment (e.g., mobile apps for ulcer segmentation that achieve high accuracy)³ and palliative care applications focus on prognosis, communication support, and ethical decision-making frameworks,^{8,9} few studies, to our knowledge, directly address the use of nurse-led AI in palliative wound care settings. This gap creates both opportunities and challenges: AI could enhance nurses' capacity for remote monitoring in home care settings, standardized documentation, and early detection of deterioration. However, the adoption of such technologies could lead to algorithmic bias, increased administrative burden, and misalignment with clinical judgment based on experience and specific training in wound management.^{10,11} This narrative review summarizes the evidence from AI for wound care. It examines the implications for the nursing profession, highlighting practice expansion, ethical governance, remote/home care delivery, training needs, and research directions. Focusing on the implications for the nursing profession, the review highlights how AI can support nurses in the management of skin wounds in palliative care.

Aims

Primary aim: to provide a comprehensive synthesis of the current and potential role of AI in nursing practice for palliative wound care

Secondary aim: to evaluate AI technical applications, ethical implications, and nursing readiness to derive strategic directions for clinical practice, education, and future research.

Methods

This narrative review draws on peer-reviewed literature sourced from PubMed and ScienceDirect up to 12th February 2026. Search terms combined on PubMed «artificial intelligence» OR «machine learning» OR «deep learning» AND «wound care» OR «palliative wound» OR «malignant wound,» AND «nurs*». In Science Direct, the string used is «artificial intelligence» AND «wound care» OR «palliative wound» OR «malignant wound,» Inclusion criteria prioritized English-language publications, including original studies (qualitative, quantitative, mixed-methods), reviews (narrative, scoping, systematic), and ethical analyses relevant to nursing implications. Exclusion criteria omitted purely technical AI papers without clinical/nursing relevance or non-palliative wound studies lacking transferable insights. The database search identified 1,228 records, which were screened for relevance and with emphasis on recent advancements in mobile AI platforms, ethical reviews, and nurse-focused attitude studies. Study selection was independently conducted by two reviewers, with disagreements resolved through discussion with a third reviewer. After screening and eligibility assessment, approximately 20 studies informed the thematic narrative synthesis, including evidence from general wound care, palliative care, ethics, and nurses' perspectives on AI, and were thematically synthesized. No formal quality appraisal or meta-analysis was conducted, given the narrative approach and evidence heterogeneity; instead, thematic integration prioritizes implications for nursing in palliative contexts. The manuscript was revised considering the SANRA framework for narrative reviews.

Results

AI-based wound assessment and monitoring

Recent advances in artificial intelligence (AI) have substantially expanded its applicability in wound care, providing nurses with tools that may improve assessment accuracy, efficiency, and accessibility. Computer vision systems, frequently based on convolutional neural networks, have demonstrated promising capabilities in wound segmentation, tissue classification, and automated measurement of wound size and depth, while also enabling the detection of subtle changes over time.¹⁻³ These technologies may reduce interobserver variability and support more standardized wound evaluations.

Several studies highlighted the growing role of mobile-based AI applications in clinical practice. Smartphone-integrated tools combined with calibration technologies allow clinicians to capture high-resolution wound images and automatically upload standardized assessments to secure digital platforms for longitudinal monitoring.^{4,12-14} Notably, Barakat-Johnson et al. reported improvements in wound documentation completeness and standardization following the implementation of an AI-supported wound assessment application, suggesting potential benefits for consistency in nursing documentation.¹³

AI-driven predictive models further extend these capabilities by integrating wound characteristics, patient comorbidities, and longitudinal clinical data to estimate healing trajectories and identify risks of delayed healing or non-healing.⁴ Although performance measures varied across studies, findings suggest that predictive AI may support earlier clinical reassessment and individualized care planning.

Importantly, most of the available evidence regarding AI-supported wound assessment derives from general wound care settings rather than palliative populations; therefore, potential applications in palliative wound care should be considered cautiously and primarily as extrapolations requiring further validation.

Telemedicine and access to care in community settings

In community, rural, and underserved settings, AI-enabled wound care technologies have shown potential to strengthen telemedicine and remote monitoring pathways. These systems may reduce the need for frequent in-person visits while supporting continuity of care for vulnerable populations, particularly older adults with chronic wounds.^{14,15} Studies conducted in northern and geographically underserved regions reported generally positive attitudes among nurses and care teams, who perceived AI-supported wound assessment as potentially more accurate and efficient than conventional approaches and valuable for streamlining workflows.¹⁵

The studies included in this section were primarily conducted in community and chronic wound care populations rather than palliative care settings. However, their findings may have implications for patients receiving palliative care, particularly in relation to continuity of care and symptom monitoring.

Generative AI and clinical decision support

Beyond wound imaging, generative AI has emerged as a complementary resource for nursing practice. Evidence suggests that generative AI tools can support nurses in developing personalized educational materials for patients and caregivers, producing content with satisfactory levels of accuracy and applicability, although concerns regarding readability and contextual adaptation remain.¹⁶

Hybrid AI systems integrating image analysis with natural language processing (NLP) have also been described, combining visual wound assessment with contextualized clinical recommendations.⁴ Such approaches may contribute to more integrated decision support by linking wound characteristics with tailored management guidance.

AI applications relevant to palliative care

Evidence directly focused on AI in palliative care remains limited and primarily concerns prognostication, communication support, and ethical decision-making rather than wound management specifically. Predictive models have been developed to identify patients who may benefit from specialist palliative care involvement by estimating mortality risk or symptom escalation, whereas NLP-based tools have been explored to support communication, structure clinical discussions, and detect psychological distress.^{8,9,17}

Because palliative wound care prioritizes symptom management, comfort, dignity, and quality of life rather than wound healing alone, findings from general wound care studies should be interpreted cautiously when extrapolated to palliative settings. Nevertheless, these technologies may have potential relevance in identifying worsening symptom burden, deteriorating wound trajectories, or changing care needs that could prompt timely and compassionate reassessment.

Ethical considerations and nurses' perspectives on AI

Artificial intelligence (AI) implementation in healthcare raises important ethical considerations, particularly in contexts involving vulnerable populations and complex decision-making such as palliative care. Ethical analyses consistently emphasize the importance of transparency, explainability, fairness, and evidence-based implementation to reduce risks of algorithmic bias, inequity, and depersonalization of care.^{10,11} Particular concerns include the quality and representativeness of training datasets, the risk of automation bias in clinical decision-making, patient privacy, and the limited interpretability of some AI systems. These challenges appear especially relevant in palliative nursing, where individualized care, relational continuity, dignity, and holistic assessment remain central to practice.

Most available evidence regarding nurses' perspectives on AI originates from general nursing and critical care settings rather than palliative care contexts specifically. Across these studies, nurses generally recognized AI's potential to reduce administrative burden, improve documentation, support clinical decision-making, and enhance patient outcomes, while simultaneously expressing concerns regarding insufficient knowledge, usability barriers, privacy risks, and possible overreliance on automated systems.¹⁸⁻²⁰ Acceptance of AI tended to increase when technologies were perceived as easy to use, supported by adequate organizational infrastructure, and developed with active clinician involvement.

In palliative care settings, the integration of AI requires additional caution. Existing studies suggest that AI should function as a supportive rather than substitutive tool, complementing nurses' clinical judgment and preserving the therapeutic relationship, communication, and holistic understanding of patients' needs at the end of life.^{21,22} Consequently, ethical governance, professional training, and nurse involvement in AI development are essential to ensure that technological innovation remains aligned with palliative care values and person-centered nursing practice.

Discussion and implications for nursing practice

Evolving evidence suggest that AI represents a valuable supportive resource for nurses managing skin wounds in palliative care, particularly in relation to wound assessment standardization, monitoring of wound progression, documentation processes, and clinical decision support.

Although several AI applications have demonstrated promising results in general wound assessment and healing-oriented care, direct evidence regarding their implementation in palliative wound care remains limited. Therefore, some implications discussed in this review are cautiously extrapolated from broader wound care literature and should be interpreted within the specific goals and ethical priorities of palliative care.

By automating repetitive assessment elements, such as precise measurement and tissue classification, AI-based systems may allow nurses to dedicate greater attention to symptom management, pain assessment, emotional support, communication, and family involvement in care planning.^{4,14} In home-based and rural palliative care settings, remote monitoring via mobile applications and AI-assisted platforms may facilitate earlier identification of wound deterioration, reduce unnecessary travel for frail patients, support continuity of care, and alleviate caregiver burden.^{12,13,15} Predictive analytics may also support anticipatory care planning and interdisciplinary coordination by identifying potential risks of complications or delayed healing trajectories. Nevertheless, these technologies should be considered supportive rather than substitutive tools, complementing, not replacing, clinical judgment, individualized assessment, and the relational dimensions of nursing care. AI data on worsening symptoms or recovery difficulties should not trigger rigid protocols, but rather invite individual discussion that focuses on the individual's priorities and wishes.^{9,10} In this context, nurses play a key role in promoting transparent, validated, and bias-aware AI systems aligned with the ethical principles of beneficence, non-maleficence, autonomy, and justice. AI should enrich professional reasoning and support evidence-informed decision-making without overriding nurses' clinical judgment or relational competencies. The implementation of AI in palliative nursing practice additionally requires adequate professional training, interdisciplinary collaboration, ethical oversight, and critical appraisal skills to ensure safe and appropriate interpretation of AI-generated outputs. However, while AI can act as a driving force in wound management, algorithms cannot replicate the sensory and experiential dimension of wound assessment, such as the perception of wound odor, or nuanced clinical intuition developed through professional experience.^{15,22} Moreover, despite its potential benefits, AI implementation in palliative wound care raises important concerns regarding algorithmic bias, unequal representation of vulnerable populations in training datasets, automation bias in clinical decision-making, and reduced transparency of AI-generated recommendations. Consequently, maintaining an appropriate balance between technological support and human clinical expertise remains essential.

Particular attention should be paid to algorithm transparency, explainability, patient privacy, data governance, and the potential risk of automation bias in vulnerable patient populations. Recent regulatory frameworks, including the European Union Artificial Intelligence Act, further emphasize the importance of human oversight and accountability in healthcare AI systems. The findings of this review also highlight the importance of strengthening nurses' competencies in evidence-based practice,

digital health literacy, and interpretation of AI-assisted clinical information. Undergraduate and postgraduate nursing education should increasingly incorporate AI fundamentals, ethical implications, critical evaluation of technological outputs, and practical exposure to digital wound-care tools.^{19,23}

Moreover, involving nurses in AI design, implementation, and governance processes may improve workflow integration, reduce administrative burden, and promote greater alignment between technological innovation and nursing professional values.²⁴ Future clinical integration of AI in palliative wound care should prioritize patient-centered outcomes, including comfort, dignity, symptom burden, quality of life, and relational continuity, rather than focusing exclusively on technical performance indicators such as classification accuracy or predictive capability.

Research gaps and priorities

Despite promising developments, direct empirical work on AI in palliative wound care remains limited. Future studies should evaluate the tools within palliative patient cohorts, focusing on symptom monitoring and defining targeted health outcomes. Implementation research is also needed to test integrated models across teams, home care services, and digital systems to optimize benefits while addressing the challenges inherent in a fragile context such as palliative care.

Limitations

This narrative review presents several limitations that should be acknowledged. First, the available literature specifically addressing artificial intelligence applications in palliative wound care remains limited. Consequently, some considerations discussed in this review are cautiously extrapolated from broader wound care and healthcare AI literature, which may not fully reflect the unique goals and complexities of palliative care settings. Second, as a narrative review, this study does not provide the methodological rigor of a systematic review or meta-analysis. Although efforts were made to ensure transparency and comprehensiveness through structured database searches and adherence to SANRA recommendations, the possibility of selection bias cannot be completely excluded. Another limitation concerns database selection. Although interdisciplinary databases were consulted (PubMed and ScienceDirect), additional databases such as CINAHL, Embase, and IEEE Xplore may have identified further nursing-specific or technical studies relevant to AI applications in wound care.

Conclusions

AI represents a promising supportive tool for nursing practice, particularly in wound monitoring and standardized assessment. Its value appears greatest when used as a collaborative partner that enhances nursing expertise rather than replacing it. By supporting nurse-centered design, ethical oversight, targeted training, and rigorous evaluation, the profession can leverage AI to promote more efficient, timely, compassionate, and equitable care in complex palliative care settings. This approach not only addresses current challenges in wound management but also reinforces nursing's fundamental commitment to holistic, person-centered practice in an era of technological transformation.

References

1. Anisuzzaman DM, Wang C, Rostami B et al. Image-based artificial intelligence in wound assessment: a systematic review. *Adv Wound Care (New Rochelle)* 2022;11:687-709.
2. Le DTP, Pham TD. Unveiling the role of artificial intelligence for wound assessment and wound healing prediction. *Explor Med* 2023;4:1001163.
3. Griffa D, Natale A, Merli Y, et al. Artificial intelligence in wound care: a narrative review of the currently available mobile apps for automatic ulcer segmentation. *BioMedInformatics* 2024;4:2321-37.
4. Chadwick P. The role of artificial intelligence in wound care: applications, evidence and future directions. *Wounds Int* 2025;16:28-41.
5. Koumaki D, Kostakis G, Boumpoucheropoulos S, et al. A narrative review of management of wounds in palliative care setting. *Ann Palliat Med* 2023;12:1089-105.
6. Sezgin D, Geraghty J, Graham T, et al. Defining palliative wound care: a scoping review by european association for palliative care wound care taskforce. *J Tissue Viability* 2023;32:627-34.
7. Chrisman CA. Care of chronic wounds in palliative care and end-of-life patients. *Int Wound J* 2010;7:214-35.
8. Ronan I, Tabirca S, Murphy D, et al. Artificially intelligent nursing homes: a scoping review of palliative care interventions. *Front Digit Health* 2025;7:1484304.
9. Abejas AG, Santos DG, Costa FL, et al. Ethical challenges and opportunities of ai in end-of-life palliative care: integrative review. *Interact J Med Res* 2025;14:e73517.
10. Oh O, Demiris G, Ulrich CM. The ethical dimensions of utilizing artificial intelligence in palliative care. *Nurs Ethics* 2025;32:1285-96.
11. Bozkurt S, Fereydooni S, Karet I, al. AI in palliative care: a scoping review of foundational gaps and future directions for responsible innovation. *J Pain Symptom Manage* 2025;70:e394-e418.
12. Barakat-Johnson M, Jones A, Burger M, et al. Reshaping wound care: evaluation of an artificial intelligence app to improve wound assessment and management amid the covid-19 pandemic. *Int Wound J* 2022;19:1561-77.
13. Barakat-Johnson M, Jones A, Burger M, et al. Reshaping wound care: evaluation of an artificial intelligence app to improve wound assessment and management. *Stud Health Technol Inform* 2024;310:941-45.
14. Raizman R, Ramirez-GarciaLuna JL, Newaz T, et al. Empowering patients and caregivers to use artificial intelligence and computer vision for wound monitoring: nonrandomized, single-arm feasibility study. *J Particip Med* 2025;17:e69470.
15. Freeman S, Sargent MJ, Rodriguez Galarza L, et al. Use of artificial intelligence-driven wound care management to enhance access to care in rural and northern communities. *Int Wound J* 2025;22:e70767.
16. Sürme Y, Topan H, Maraş Baydoğan G. How successful is ai in developing postsurgical wound care education material? *Wound Repair Regen* 2025;33:e70041.
17. Pinto A, Santos C, Aguiar R, et al. The use of artificial intelligence in palliative care communication: a narrative review. *Cureus* 2025;17:e80524.
18. Gürdap Z, Öner U. Nurses' attitudes toward artificial intelli-

- gence applications and their clinical decision-making competence: a cross-sectional study. *Nurse Educ Today* 2026;160:107014.
19. El Arab RA, Alshakihs AH, Alabdulwahab SH, et al. Artificial intelligence in nursing: a systematic review of attitudes, literacy, readiness, and adoption intentions among nursing students and practicing nurses. *Front Digit Health* 2025;7:1666005.
 20. Alrashedi H, Alderaan SM, Alnomasy N, et al. Insights into factors affecting nurses' knowledge of and attitudes toward AI and implications for successful ai integration in critical care: cross-sectional study. *JMIR Nurs* 2026;9:e85649.
 21. Buchanan C, Howitt ML, Wilson R et al. Predicted influences of artificial intelligence on the domains of nursing: scoping review. *JMIR Nurs* 2021;4:e23933.
 22. Ceylan H. Nurses' perspectives on the interaction of artificial intelligence and spirituality in palliative care units: a qualitative research. *Turk J Health Sci Life* 2025;8:72-82.
 23. Encarnação R, Alves J, Marques A, et al. Artificial intelligence in wound care education: scoping review. *Nurse Educ Today* 2025;155:106872.
 24. Dornan M. Every nurse an ai nurse: a framework for integrating artificial intelligence across nursing practice, education, research and policy. *Digit Health* 2025. Online Ahead of Print.

Received: 22 March 2026; Accepted: 30 June 2026.

Contributions: Daniela Nigrelli, Marika Lo Monaco, Laura Iacorossi, Roberto Latina, Giuliano Anastasi, conceptualization, methodology, project administration, formal analysis, data curation, supervision, writing original draft, writing-review & editing. Mariachiara Figura, Angela Peghetti, conceptualization, project administration, formal analysis, methodology, data curation, writing original draft, writing-review & editing.

Conflict of interest: the authors declare no competing interests and all authors confirm accuracy.

Ethics approval: not applicable.

Availability of data and materials: the datasets analyzed during the current study are available upon reasonable request from the corresponding author.

Acknowledgements: we acknowledge the contributions of experts in the field of Artificial Intelligence who provided insightful feedback during the conceptualization of the study and the interpretation of findings.

Publisher's note: all claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).